

As in the case of CP or ZP, the insertion of guard periods results in a reduction in the effective data transmission rate for user data. Furthermore, in the case of CP a substantial part of the transmission capacity is used for transmitting a CP, which is especially unwanted in mobile transmission methods. In radio systems conforming to Hiperlan/2 (High Performance Radio Local Area Network Type 2), the CP amounts to 20% of the time for an OFDM symbol.

US 6345076 B1 describes a method for the incoherent receipt of differentially modulated data. Symbols which are received are estimated using an incoherent MLSE (maximum likelihood sequence estimation). For the purpose of improving the reception quality, the symbols which are received are subdivided into overlapping symbol blocks, which overlap by at least one symbol. Because, in the case of differentially modulated data, the items of data which are to be transmitted are not contained in the individual symbols but in the phase changes of neighboring symbols, the overlapping of the symbol blocks is required so that there is a reference phase for each symbol in a symbol block.

Hence, the object underlying the invention is to specify an advantageous method for data estimation which makes possible the transmission of data units without guard periods.

This object is achieved by the method and the receiving station in accordance with the independent claims.

Advantageous embodiments and developments of the invention are set down in the dependent claims.

With the method in accordance with the invention for estimating data units transmitted in a radio block via a radio channel, a signal sequence arising from the data units which are transmitted is received in a receiving station. The components of the signal sequence which is received are assigned to at least a first and a second signal block in the time-sequence of their receipt, and are processed block-by-block, with the signal blocks overlapping in such a way that at least one component of the received signal sequence belongs to both signal blocks, and by reference to the components of both signal blocks estimated values are determined for the data units which were transmitted. The use of overlapping signal blocks for the estimation of the transmitted data units makes it possible to forgo a guard period

Claims

1. Method for estimating data units (d11, d12, d13, d14, d21, d22, d23, d24) transmitted via a radio channel in a radio block (d), by which
 - the transmitted data units (d11, d12, d13, d14, d21, d22, d23, d24) cause a signal sequence (S) to be received in a receiving station (BS),
 - the components (K1, K2, K3, K4, K5, K6, K7, K8, K9, K10) of the received signal sequence (S) are assigned in the time-sequence of their receipt to at least a first signal block and a second signal block (X1, X2, X3; Y1, Y2, Y3) and are processed block by block, whereby the signal blocks (X1, X2, X3; Y1, Y2, Y3) overlap in such a way that at least one component (K3, K4, K5, K6, K7, K8) of the received signal sequence (S) belongs to both signal blocks (X1, X2, X3; Y1, Y2, Y3),
 - and, by reference to the components of both signal blocks (X1, X2, X3; Y1, Y2, Y3), estimated values are determined for the data units (d11, d12, d13, d14, d21, d22, d23, d24) which were transmitted, with the overlapping of the signal blocks (X1, X2, X3; Y1, Y2, Y3) being effected in such a way that there is at least one of the data units (d13, d14, d21, d22) which was transmitted for which estimated values are determined by reference to each of the two signal blocks (X1, X2, X3; Y1, Y2, Y3)

characterized in that

after both the estimated values have been determined, the estimated value determined by reference to one of the two signal blocks (d1, d2, d3) is used exclusively for the at least one data unit (d13, d14, d21, d22) which was transmitted.

2. Method in accordance with claim 1, in which

a cyclic transfer matrix (C1, C2, C3) is assigned to each of the signal blocks (Y1, Y2, Y3), and the estimated values are calculated by multiplying the signal blocks (Y1, Y2, Y3) by the relevant inverse transfer matrix.

3. Method in accordance with claim 1, in which a transfer matrix (H1, H2, H3) with a Töplitz structure and band structure is assigned to each of the signal blocks (X1, X2, X3), and the estimated values are calculated by multiplying the signal blocks (X1, X2, X3) by the relevant pseudo-inverse transfer matrix.

4. Receiving station (BS) with

- facilities (SE) for receiving a signal sequence (S) arising from data units (d11, d12, d13, d14, d21, d22, d23, d24) transmitted in a radio block (d),
- facilities (P) for assigning the components (K1, K2, K3, K4, K5, K6, K7, k8, k9, K10) of the received signal sequence (S) in the time-sequence of their receipt to at least a first signal block and a second signal block (X1, X2, X3), and with facilities (P) for processing the signal blocks (X1, X2, X3) block by block, whereby the signal blocks (X1, X2, X3) overlap in such a way that at least one component (K3, K4, K5, K6, K7, K8) of the received signal sequence belongs to both signal blocks (X1, X2, X3),
- and facilities (P) for determining, by reference to the components of both signal blocks (X1, X2, X3), estimated values for the data units (d11, d12, d13, d14, d21, d22, d23, d24) transmitted, whereby the facilities (P) effect the overlapping of the signal blocks (X1, X2, X3; Y1, Y2, Y3) in such a way that there is at least one transmitted data unit (d13, d14, d21, d22) for which estimated values are determined by reference to each of the two signal blocks (X1, X2, X3; Y1, Y2, Y3),

characterized in that

- the facilities (P) are designed so that, after the two estimated values have been determined, one only of the estimated values, determined by reference to one of the two signal blocks (d1, d2, d3), is used exclusively for the at least one data unit (d13, d14, d21, d22) which was transmitted.